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REVIEW OF THE PROGRESS OF AMERICAN INVERTEBRATE PALEONTOLOGY FOR THE YEAR 1890.

BY CHARLES R. KEYES.

SINCE the last consideration of the subject in this journal important contributions to American invertebrate paleontology have been made. The number of titles is considerably in excess of that of last year. Several extensive state reports have appeared; but the large majority of the papers issued have been incorporated in serials. With the exception of a few brief presentations on small zoological groups no monographical works have been distributed during the year just closed. The several great works alluded to last year as in an advanced state of preparation have been necessarily delayed by the discoveries of much new material; but the evidence at hand clearly indicates that the delay will not be unaccompanied by more suggestive results than could otherwise have been reached.

Excepting those proposed in a single brochure which has not as yet been generally distributed, the number of new species considered is very much below that of any similar period during the past decade, thus greatly emphasizing the statements made in the last "review." On a former occasion the fact was mentioned that the interdependence of the stratigraphical geologist, the biologist, and the paleontologist is constantly becoming more and more intimate. This suggestion has never been more fully corroborated than by the recent appearance of several most valuable morphological memoirs, based largely upon critical studies of extinct forms of life. Nor is the reality of the remark less apparent in certain late articles dealing with problems of stratigraphy.

In the annual report (pp. 116–120) of the Geological and Natural History Survey of Canada, Henry M. Ami has a Systematic List of Fossils with Localities referred to in Report K.

Charles E. Beecher, has in the *American Journal of Science* (3), Vol. XL.: North American Species of Strophalosia, pp. 240–246; On Leptænisca, a New Genus of Brachiopod from the Lower

Helderberg Group, pp. 238–240, 1 plate; Koninckia and Related Genera, pp. 211–219, 1 plate; and On the Development of the Shell in the Genus Tornoceras Hyatt, pp. 71–75.

I. P. Bishop communicates a note on A New Locality of Lower Silurian Fossils in the Limestone of Columbia County, N. Y., to *American Journal of Science*, Vol. XXXIX., pp. 69–70.

Samuel Calvin describes Some New Species of Paleozoic Fossils, in the Bulletin of the Laboratories of Natural History of the State University of Iowa, Vol. I., 173–181, 3 plates; also, Note on a Specimen of *Conularia missouriensis* Swallow with Crenulated Costæ, in *American Geologist*, Vol. V., pp. 207–208.

E. J. Chapman has some Remarks on the Classification of the Trilobites, with Outline of a New Grouping of These Forms; Transactions Royal Society of Canada, Vol. VII., Sec. vi., pp. 113–120.

William B. Clark notes the occurrence of certain fossils, in a Third Annual Geological Expedition into Southern Maryland and Virginia; Johns Hopkins University Circulars, No. 81, pp. 69–71.

J. M. Clarke has: As Trilobitas do Grez de Ereré e Maecurú Estado do Pará, Brazil, in the Archivos de Museu Nacional do Rio de Janeiro, Vol. IX., pp. 1–57, two plates.

E. W. Claypole considers a new form of crustacean in Paleontological Notes from Indianapolis; *American Geologist*, Vol. VI., pp. 255–260.

F. W. Cragin, in the Bulletin of Washburn College, Vol. II., pp. 65–68, has Contributions to the Paleontology of the Plains.

Coral and Coral Islands (third edition), by James D. Dana, has appeared, with considerable new material added. The author also has a note on fossils in the Taconic limestone belt at the west foot of the Taconic Range in Hillsdale, N. Y., in *American Journal of Science* (3), Vol. XL., pp. 256, 257.

William H. Dall contributes to the knowledge of the Tertiary Fauna of Florida; Transactions of the Wagner Free Institute of Science, Vol. III., pp. 1–200, 12 plates.

J. William Dawson has: A Note on a Fossil Fish and Marine Worm Found in a Pleistocene Nodule in Green's Creek, Ottawa, in *Canadian Record of Science*, Vol. IV., pp. 86–88; On Burrows and Tracks of Invertebrate Animals in Paleozoic Rocks, and Other Markings, in the Quarterly Journal of Geological Society of London, Vol. XLVI., pp. 595–618; and On New Species of Fossil Sponges from the Siluro-Cambrian at Little Metis, on the lower St. Lawrence, in Transactions Royal Society of Canada, Vol. VII., Sec. iv., pp. 31–55.

In the *Canadian Record of Science*, Vol. IV., pp. 104–109, William Deeks gives a List of Fossils from the Lower Helderberg formation of St. Helen's Island.

W. W. Dodge notes Some Lower Silurian Graptolites from Northern Maine, in the *American Journal of Science* (3), Vol. XL., pp. 153–155.

P. Martin Duncan, in the Journal of the Linnæan Society, Vol. XXIII., pp. 1–311, gives a Revision of Generic and Great Groups of the Echinoidea.

R. W. Ells lists many fossils in his Second Report on the Geology of a Portion of the Province of Quebec; Annual Report Geological and Natural History Survey of Canada, Vol. III., Report K.

Oliver Everett with E. O. Ulrich describes some new Silurian sponges, in the Geological Survey of Illinois, Vol. VIII., pp. 253–282.

A. H. Foord revises the Group of *Nautilus elegans* Sowerby; *Geological Magazine* (3), Vol. VII., pp. 542–552.

C. H. Gordon gives his Observations on the Keokuk Species of Agaricocrinus, in the *American Geologist*, Vol. V., pp. 257–261; and On the Keokuk Beds at Keokuk, Iowa, in the *American Journal of Science* (3), Vol. XL., pp. 295–300.

James Hall has an abstract On New Genera and Species of the Family Dictyospongidæ, in Bulletin of the Geological Society of America, Vol. I., p. 22. Also Some Suggestions Regarding ing the Subdivisions and Grouping of the Species Usually Included Under the Generic Term Orthis, in Accordance with the External and Internal Characters and Microscopic Shell Structures; pp. 19–21 of same publication.

A Preliminary Catalogue of the Fossils Occurring in Missouri is given in Bulletin No. 1, Geological Survey of Missouri, pp. 60–85, by G. Hambach.

The Occurrence of Goniolina in the Comanche Series of the Cretaceous is noted by R. T. Hill in the *American Journal of Science* (3), Vol. XL. pp. 64, 65.

Jos. F. James discusses the Maquoketa Shales and their Correlation with the Cincinnati Group of Southwestern Ohio, in the *American Geologist*, Vol. V., pp. 335–356; and, On Variation, with Special Reference to Certain Paleozoic Genera, in AMERICAN NATURALIST, Vol. XXIII., pp. 1071–1087.

T. Rupert Jones describes Some Paleozoic Ostracoda from North America, Wales, and Ireland, in Quarterly Journal Geological Society of London, Vol. XLVI., pp. 1–30; also in the same journal, pp. 534–556, Some Devonian and Silurian Ostracoda from North America, France, and the Bosphorus; and Some Fossil Estheriæ, in the *Geological Magazine*, Vol. IX., pp. 385–390.

Charles R. Keyes has a Review of the Progress of American Invertebrate Paleontology for the Year 1889, in the AMERICAN NATURALIST, Vol. XXIV., pp. 131–138; Certain Forms of Straparollus from Southeastern Iowa, in *American Geologist*, Vol. V., pp. 193–197; Genesis of the Actinocrinidae, in AMERICAN NATURALIST, Vol. XXIV., pp. 243–254; Generic Relations of Platyceras and Capulus, in the *American Geologist*, Vol. VI., pp. 6–9; Note on the Preservation of Color in Fossil Shells, in *The Nautilus*, Vol. IV., pp. 30–31; Synopsis of American Carbonic Calyptræidæ, in Proceedings of the Academy of Natural Sciences, Philadelphia, 1890, pp. 150–181; Discovery of Fossils in the Limestones of Frederick County, Maryland, in Johns Hopkins University Circulars, No. 84, p. 32; and The Naticoid Genus Strophostylus, in the AMERICAN NATURALIST, Vol. XXIV., pp. 1111–1117.

Remarks on the Nature of Organic Species are given by Joseph Leidy in Transactions Wagner Free Institute of Science, Vol. II. pp. 51–53.

J. P. Lesley has issued Volumes II. and III. of his Dictionary of Fossils; P 4, Geological Survey of Pennsylvania.

Joshua Lindahl has prepared a General Index to the Eight Reports of the Illinois Geological Survey; Paleontology, pp. 62–151 of appendix.

G. F. Mathew has Cambrian Organisms in Acadia; Transactions Royal Society of Canada, Vol. VII., Sec. iv., pp. 135–162.

A Note on Some of the Causes of Extinction of Species appears in the *American Geologist*, Vol. V., pp. 100–104, by J. M. McCreery.

S. A. Miller has the Structure, Classification, and Arrangement of American Paleozoic Crinoids into Families, in the *American Geologist*, Vol. VI., pp. 340–357; and with W. F. E. Gurley, Descriptions of Some New Genera and Species of Echinodermata from the Coal Measures and Subcarboniferous Rocks of Indiana, Missouri, and Iowa, in the Journal of Cincinnati Society of Natural History, April, 1890.

In the AMERICAN NATURALIST, Vol. XXIII., pp. 261–266, Henry F. Osborn gives The Paleontological Evidence for the Transmission of Acquired Characters.

E. N. S. Ringueberg describes some Crinoidea of the Lower Niagara Limestone at Lockport, N. Y., in the Annals New York Academy Sciences, Vol. V., p. 301.

Charles W. Rolfe has Characters and Distribution of the Genera of Brachiopoda, in the AMERICAN NATURALIST, Vol. XXIII., pp. 983–998.

Studies on Monticulipora are given in the *American Geologist*, Vol. VI., pp. 102–121, by C. Rominger.

R. R. Rowley has some Observations on Natural Casts of Crinoids and Blastoids from the Burlington Limestone, in the *American Geologist*, Vol. VI., pp. 66–67; and *Batocrinus calvini*, in same journal, Vol. V., pp. 146, 147.

Samuel Scudder has, in the Memoirs of the Boston Society of Natural History, pp. 401–472: New Types of Carboniferous Cockroaches from Carboniferous Deposits of the United States; New Carboniferous Myriapods from Illinois; Illustrations of Carboniferous Arachnida of North America, of the Orders Anthracomarti and Pedipalpi; and Insects of the Triassic Beds of Fairplay, Colorado.

In the 23d Report of the New York State Museum, pp. 230–239, Charles Schuchert has: On Syringothyris, Winchell, and its American Species; and List of the American Paleozoic Orthis, Spirifera, Spiriferina, and Syringothyris.

B. Shimek discusses the Löss and Its Fossils, in the Bulletin of the Laboratories of Natural History of the State University of Iowa, Vol. I., pp. 200–214, and Vol. II., pp. 89–98.

G. B. Simpson has Descriptions of New Species of Fossils in the Transactions American Philosophical Society, Vol. XVI., pp. 435–460.

J. B. Tyrrell incidentally refers to certain fossils from the Cretaceous of Manitoba; *American Journal of Science* (3), Vol. XL., pp. 227–232. Also has Foraminifera and Radiolaria from the Cretaceous of Manitoba, in the Transactions of the Royal Society of Canada, Vol. VIII., Sec. iv., pp. 111–115.

American Paleozoic Sponges and Bryozoa are described by E. O. Ulrich in the Geological Survey of Illinois, Vol. VIII., pp. 209–678; also New Lamellibranchiata, in *American Geologist*, Vol. V., pp. 270–284, and Vol. VI. pp. 173–181, and 382–389.

A. W. Vogdes issues as Bulletin 63 of the U. S. Geological Survey, Bibliography of Paleozoic Crustacea.

Charles Wachsmuth and Frank Springer have New Species of Crinoids and Blastoids from the Kinderhook Group of Lower Carboniferous Rocks at Le Grand, Iowa, and A New Genus from Niagara Group of Western Tennessee, in Geological Survey of Illinois, Vol. VIII., pp. 155–208; also, Peristomic Plates in Crinoids, in Proceedings Academy of Natural Sciences, Philadelphia, 1890, pp. 345–392.

Charles D. Walcott has, in the Proceedings U. S. National Museum, Vol. XIII., pp. 266–279: Descriptions New Forms of Upper Cambrian Fossils; and in Bulletin Geological Society of America, Vol. I., pp. 335–356, The Value of the Term "Hudson River Group" in Geological Nomenclature; also, A Review of Dr. R. W. Ells' Second Report on the Geology of a Portion of the Province of Quebec, with Additional Notes on the Quebec Group, in the *American Journal of Science*, Vol. XXXIX., pp. 101–115.

A. Warner notes some casts of Scolithus flattened by pressure, in the *American Geologist*, Vol. V., pp. 35–38.

In the AMERICAN NATURALIST, Vol. XXIII., pp. 710–712, C. L. Webster has a Description of a New Genus of Corals from the Devonian Rocks of Iowa; and on pp. 621–625, Contributions to the Knowledge of the Genus Pachyphyllum.

J. F. Whiteaves describes Some New Species of Fossils from the Devonian Rocks of Manitoba, in the Transactions of the Royal Society of Canada, Vol. VIII., Sec. iv., pp. 93–110, six plates.

H. S. Williams has the Devonian System of North and South Devonshire, in the *American Journal of Science*, Vol. XXXIX., pp. 31–38; and, The Cuboides Zone and Its Fauna: A Discussion of the Methods of Correlation, in the Bulletin of the Geological Society of American, Vol. I., pp. 481–500.

L. C. Wooster gives a few notes on the fossils of the Permo-Carboniferous of Greenwood and Butler counties, Kansas, in the *American Geologist*, Vol. VI., pp. 8–18.

A. H. Worthen notes certain Cretaceous fossils in the drift deposits of Illinois, Geological Survey of Illinois, Vol. VIII., pp. 1–24; also, Descriptions of Fossil Invertebrates, pp. 69–154 of the same publication.